DOCUMENT RESUME

ED 424 890 JC 980 469

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TITLE Assessing Motivational Aspects of Reading in Developmental Reading Courses.

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PUB DATE 1998-11-05

NOTE 25p.; Paper presented at the Annual Meeting of the Illinois Association for Institutional Research (Findlay, IL, November 5, 1998).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Basic Skills; Classroom Techniques; *Developmental Studies Programs; Higher Education; Learning Motivation; Reading Difficulties; Reading Instruction; *Reading Motivation; *Remedial Reading; Skill Development; Student Needs; Surveys

ABSTRACT

This paper focuses on the development and analysis of a survey designed to assess two aspects of motivation to read, specifically for adults enrolled in community college reading courses: self-perceived competence (self-concept) and valuing of the task (value). It also assesses developmental reading students' use of strategic reading behaviors. The study evaluates the relationship between student scores on the motivational survey scales and their reading competency, as measured by the Degree of Reading Power (DRP) test. Additionally, the study addresses the question of whether or not a factor analysis of the results supports the existence of the two factors, self-concept and value, as found by Gambrell, et al. Findings reinforce the belief that the creation of more meaningful contexts promotes student motivation to read. Low subscores on the value of reading factor call for classroom reading that emphasizes meaningful purposes--readings should be relevant to students. They should address topics that relate to student prior knowledge and should answer the student's questions. Appended are items included on the survey, motivational scales, and scale statistics for fall 1997, factor models and patterns, and three variable correlation tables. (Contains 13 references.) (AS)

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Assessing Motivational Aspects of Reading in Developmental Reading Courses

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Paper presented at the annual meeting of the

Illinois Association for Institutional Research

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Introduction

Developmental reading teachers are confronted daily with students' lack of motivation to read. Research shows that student motivation to read begins to diminish as early as fourth grade. This means students disconnect from reading at an early age, choosing not to read. Our students self-report that they have been disengaged from reading, avoiding both personal and school related reading for at least eight to ten years. They arrive at college with reading deficits, unable to read for details, identify main ideas or recognize relationships among meaningful ideas. They also exhibit a related lack of reading motivation.

The results of The National Assessment of Educational Progress (NAEP) in Reading indicate that the majority of children and adolescents in the United States are reading only at a basic level. (Campbell, Donahue, Reese, & Phillips, 1996) Participation in our society requires higher and higher levels of literacy. "Approximately 80% of the population above the age of 12 now needs higher order literacy competency for full participation in society." (Guthrie, 1996) This is particularly significant for our students who are trying to enter an academic cultural niche that they are not prepared to enter. The community college reading program is perhaps the last best hope for students who have encountered failure for their entire school careers.

Recognition of this problem prompted us to introduce a more meaningful and engaging curriculum six years ago. We noticed a by-product of the new curriculum seemed to be increased motivation to read. We wondered if this change was measurable and if it could be connected to achievement as measured by the *Degree of Reading Power* test (DRP) developed by the College Entrance Examination Board (1986). A search of pertinent literature indicated that motivation is indeed connected with achievement (Winne, 1985; Ford, 1992; Henk & Melnick, 1995).

Our search revealed several important factors; two, in particular, were self-perceived competence in reading (*self-concept*) and valuing of the task (*value*). First, when students believe that they can succeed, they are much more likely to continue with the task than when they anticipate failure. For students who have learned from grade

school on that they are not successful readers, belief of failure becomes a cycle. Believing that they will fail inhibits their reading. The second factor, task value, means that students feel the task is worth doing. "Students who perceive reading as valuable and important and who have personally relevant reasons for reading will engage in reading in a more planned and effortful manner" (Gambrell *et al.*, 1996).

We were also interested in exploring students' use of strategic reading behaviors (*reading strategies*) as they relate to the above mentioned motivational factors. We felt knowing how and when to use specific strategies while reading should enhance feelings of control and therefore increase reading self-concept.

Gambrell, Palmer, Codling, & Mazzoni (1996) developed the *Motivation to Read Profile* (MRP) to assess reading self-concept and value of reading in children in grades 2-6. The MRP consists of a group-administered quantitative reading survey and a qualitative conversational interview. The group survey consisted of twenty items, ten for measuring self-perceived competence and ten for measuring valuing of the task. Each item allowed for four possible responses generating lickert type scales. The authors reported that the twenty item instrument measured both self-perceived competence (*self-concept*) and valuing of the task (*value*). The two factors were confirmed through unweighted least squares factor analysis with varimax rotation. Moderately high Cronbach α reliabilities of .75 for *self-concept* and .82 for *value* scales were reported.

This paper primarily focuses on the development and analysis of a survey designed to assess two aspects of motivation, self-perceived competence (*self-concept*) and valuing of the task (*value*). It also assesses developmental reading students' use of strategic reading behaviors (*reading strategies*). Item analyses within the three scales are used to select the final set of items. Both exploratory and confirmatory factor analytic techniques were employed to verify that the selected items provide measures of the two aspects of reading motivation under study and of students' use of strategic reading behaviors.

Using the final set of items, the study then focuses on the relationship between students' scores on the motivation survey scales and their reading competency as

measured by the DRP test. Additionally, the study addresses the question of whether or not the *self-concept* and *value* scale items load on two factors as found by Gambrell, *et. al.*

Method

Development of the survey instrument

Our goal was to develop a quickly administered pre/post survey for students in semester-long developmental reading courses. Consequently, we focused on adapting the quantitative section of the MRP survey for the community college population. Nineteen of the twenty MRP items were adapted for the survey titled simply "RDG 099 CLASS SURVEY." Wording from the MRP was retained whenever possible. Statements targeting a younger population were modified to be more age appropriate. Nine of the *value* scale items and ten of the *self-concept* scale items were retained from the MRP. An additional four *value* scale items and seven *self-concept* scale items were added. Nine *reading strategies* scale items were also incorporated in the instrument. Students were asked to indicate their level of agreement from "strongly disagree" to "strongly agree" generating a six-point lickert scale. Figure 1 provides the 39 item statements and shows which scale they were assigned. Items marked with an asterisk were adapted from the original MRP survey.

Insert Figure 1 about here.

The survey was printed on scannable forms that included space for instructors to add the students DRP scores for scanning.

Data collection

The survey was administered to 261 students in developmental reading courses at the beginning of the Fall 1997 semester and to 223 during the last week of classes. It was also administered to 348 students at the beginning of the Fall 1998 semester.

The DRP test was administered to students at the beginning and end of the Fall 1997 semester and at the beginning of the Fall 1998 semester. Instructors added the students' DRP raw scores to their completed surveys. Once DRP scores were added,

surveys were scanned and data was ready for analysis. Data collected from Fall 1998 students were held in reserve for confirmatory factor analyses.

Item selection

The responses on the 39 items from the beginning of Fall 1997 semester were examined individually. Items that exhibited skewness or kurtosis of one or greater in absolute value were eliminated from the pool of items. Within scale and total score reliabilities were then examined. The five items most contributing to within scale reliability were then retained for further examination with factor analytic techniques. The fifteen items retained for further analysis and scale statistics are shown in Table 1.

Insert Table 1 about here.

The number of items retained was limited to 15. Primarily, this was due to size limitations of the LISREL software used to analyze factor patterns.

Data analyses

Several types of analyses were planned for the Fall 1997 data using the items selected from the Fall 1997 beginning of semester survey data as outlined below:

1. exploratory and confirmatory factor analyses using the selected items,
2. examination of scale performance from the beginning of the Fall 1997 semester to the end of the semester,
3. examination of the relationship of scores on the three motivational scales with student reading performance, and
4. examination of the Gambrell, *et.al.* theory as it applies to college level developmental reading students.

Each of the analyses is discussed below under separate headings.

Exploratory and confirmatory factor analyses. The SPSS unweighted least squares factor analysis (ULS) with varimax rotation software was used to initially explore the interitem relationships and to discover the actual number of factors. Varimax rotation of the initial solution minimizes the number of variables with high loadings of a factor, ideally creating more interpretable factors (Norušis,1994). Our intent was to determine if

the items within each scale substantially loaded on a single factor and if there was a different factor for each scale. If the factor pattern was substantiated, simple summing of the item scores within a scale would provide a factor based scale that could be used to assess the motivational factors and the strategic reading behavior factor under consideration (Kim and Mueller, PP 70-72). It should be pointed out that simply summing item scores within a scale will not produce scale scores that are uncorrelated. For our purposes, if the factor pattern prevailed, we could use the factor based scales for measuring motivational change from the beginning to the end of semester. Once the exploratory factor analyses were completed, confirmatory factor analyses were undertaken.

Confirmatory factor analyses consisted of two parts. First, using the factor pattern discovered in the exploratory analysis phase, determining if the pattern could be confirmed using LISREL 7.20 software (Jöreskog and Sörbom, 1991). Second, determining if the factor pattern also applied to the Fall 1998 survey data again using the LISREL 7.20 software.

The general measurement model as stated by Jöreskog and Sörbom (1996, p123) is:

$$\mathbf{x} = \Lambda_x \xi + \delta \qquad \text{where} \qquad (3.1)$$

$\mathbf{x}' = (x_1, x_2, \ldots, x_q)$ are the observed or measured variables,

Λ is the matrix Λ_x of the general model,

$\xi' = (\xi_1, \xi_2, \ldots, \xi_n)$ are latent or unobservable variables, and

$\delta' = (\delta_1, \delta_2, \ldots, \delta_3)$ are error variables

Figure 2 provides a visual picture of the general measurement model.

Insert Figure 2 about here.

The model assumes that 1) the ξ's and δ's are random variables with zero means, 2) the δ's are uncorrelated with the ξ's, and 3) all observed variables are measured in deviations from their means.

The measurement model represents the regression of **x** on ξ and the element λ_{ij} of Λ is the partial regression coefficient of ξ_j in the regression of x_i on $\xi_1, \xi_2, \ldots, \xi_n$.

The assumed model implies that the covariance matrix of **x** is

$$\Sigma = \Lambda\Phi\Lambda' + \Theta , \qquad (3.2)$$

where Φ and Θ are the covariance matrices of ξ and δ, respectively.

Standardization: In the standardized solution for this submodel, the ξ-variables have unit variance and Φ is a correlation matrix. If the latent variables are assumed uncorrelated in order to make the model identifiable, Φ becomes the identity matrix, **I**. (Jöreskog and Sörbom 1996, pages 123-124)

Scale performance from beginning to end of semester. Matched pairs *t*-tests were employed to test the hypotheses of no significant differences of scale means from pre- to post-survey administrations.

Relationship of motivational scale scores to reading performance. Both beginning and end of Fall 1997 data were used to examine what, if any, relationship exists between motivation as measured by the three scales and reading performance as measured by the DRP.

Examination of the Gambrell, *et.al.* theory. Confirmatory factor analytic techniques on *value* and *self-concept* scale items adapted from the MRP were used to test the hypothesis that these items load on two motivational factors in the college developmental reading population .

Results

Exploratory and confirmatory factor analyses

The 15 selected items, five for each scale, were factor analyzed using the SPSS unweighted least squares (ULS) factor analysis with varimax rotation software. The resulting factor pattern matrix is shown in Figure 3a. Items that loaded at least .45 on a factor have a black rectangle associated with the factor; items that loaded at least .35 but less than .45 have a gray rectangle associated with the factor.

Insert Figure 3a about here.

Examination of Figure 3a shows that items within each scale loaded highly on one factor. However, five items also loaded at least .35 on a second factor (R11 and R12 on *Self-concept;* and S39, V33, and V34 on *Reading Strategies*).

Using LISREL 7.20 software, it was possible to test the hypothesis that the correlation matrices from the 1997 and 1998 data sets are equal (Jöreskog and Sörbom 1996, pages 281-282). The test statistic, which follows a χ^2_d distribution is defined as the total number of subjects in both groups, N, times the minimum of the fit function defined below for ULS (adapted from Jöreskog and Sörbom, 1996 p.20 and p. 279):

$F = \sum_{g=1}^{2}\left(N_g / N\right)F_g\left(S^{(g)}, \Sigma^{(g)}\right)$ where g refers to the group (g=1 refers to the 1997 data and g=2 refers to the 1998 data), $F_g = \frac{1}{2}tr\left(S_g - \Sigma_g\right)^2$ is the function minimized by the ULS estimator, and $\left(S_g - \Sigma_g\right)$ is the residual matrix. The degrees of freedom are given by $\frac{1}{2}G(q)(q+1) - t$, where G=2 is the number of groups, q is the number of variables and t is the total number of parameters. For this study, there were 120 degrees of freedom. The analysis resulted in $\chi^2_{120} = 125$ with an associated p of .358. Thus the hypothesis of equal correlation matrices is accepted.

Accepting the hypothesis of equal correlation matrices, a factor analysis using the factor pattern from the 1997 analysis was done with the 1998 data. LISREL was the software used. The ULS factor analysis resulted in a slightly modified pattern for the 1998 data. Figure 3b shows the factor pattern for the 1998 data.

Insert Figure 3b about here.

Comparing the 1997 factor pattern with the 1998 factor pattern reveals some striking similarities and a few differences. In both data sets, the five *value* scale items and the five *self-concept* scale items each strongly loaded on separate factors. For the *reading*

strategies scale items, only four continued to load strongly on the third factor. Only one (R11) of the five items that were slightly loaded on a second factor in the 1997 data set was loaded on a second factor in the 1998 data set. A χ^2 test for similarity of factor pattern for the 1997 and 1998 data sets indicated that there were significant differences among the factor patterns. However, goodness of fit indices for the 1997 and 1998 data sets were .988 and .990 respectively, indicating a very good fit. Several authors indicate that χ^2 is sensitive both to nonnormality and sample size that may have been a factor resulting in a significant χ^2 value.

One last result from the LISREL analyses of the data sets needs to be mentioned. During analysis, no assumption was made that the factors were uncorrelated. As a result, the program provided estimates of the factor correlation coefficients. As shown in Table 2, the factors are moderately correlated in both the 1997 and 1998 data sets.

Scale performance from beginning to end of semester

Results of paired *t*-tests on the scale means from the beginning and end the Fall 1997 semester administrations of the survey are shown in Table 3.

Insert Table 3 about here.

Clearly students exhibited highly significant gains ($p < .01$) on the *value*, *self-concept*, and *reading strategies* scales from the beginning to the end of the 1997 Fall semester.

Relationship of motivational scale scores to reading performance

Examination of correlations of the DRP reading score with the *value*, *self-concept*, and *reading strategies* scale scores revealed a very slight positive correlation between the DRP reading score and the *self-concept* scale score.

Insert Table 4 about here.

The slight positive correlation for DRP and *self-concept* scores occurred for both the 1997 and 1998 data sets. Although the 1997 data also showed a slight positive correlation for DRP and *reading strategies* scores in 1997, it was not replicated in the 1998 data.

Table 4 also shows that the *value*, *self-concept*, and *reading strategies* scales exhibit significant moderate correlations ranging from .49 to .61 for 1997 data and from .57 to .64 for 1998 data.

Examination of the Gambrell, *et.al.*, theory

Eighteen of the original MRP items, as adapted for college developmental reading students, were included in a factor analysis to test the Gambrell, *et. al.*, theory of two factors. The resulting factor pattern is shown in Figure 4a.

Insert Figure 4a about here.

It appears, that for the group tested, there were three factors for the 1997 data. Items that loaded at least .45 on a factor are indicated by a black rectangle under the factor, items that loaded between .30 and .44 are indicated by a gray shaded rectangle.

Repeating the process using 1998 data resulted in four factors as shown in Figure 4b.

Insert Figure 4b about here.

Examining the Figures 4a and 4b indicates that there likely are more than two factors underlying the *value* and *self-concepts*. Whether this is due to older students being better able to differentiate among items, or is due to the change from a four point to a six point item scale, or is due to some other reason is unclear from this data.

Conclusions

One result of our study is that the Motivation to Read Profile, which was designed for younger children, seems to apply to older students, with a few modifications. The same factors influencing motivation, self-concept and task value, appear as factors for

community college students. In addition, preliminary results indicate that knowledge of strategic behavior is also a factor influencing motivation among our students. Another result is that the program we have developed at Harper College does seem to positively influence motivation to read. The findings are significant to our program because they reinforce our belief that the creation of more meaningful contexts promotes student motivation to read. This motivation marks a significant change in our students who acknowledge that they have never thought of themselves as readers. From this, we believe that we are achieving two of our program outcomes, improvement of self-concept as a reader and increased valuing of the reading process.

The minimal correlations between motivational scale scores and the DRP reading test score are somewhat puzzling. Students taking developmental reading come from the low end of the college student reading level distribution by virtue of their placement in the class. It is quite possible that this restriction to the low end of the distribution artifically deflated the correlations. More research in this area is needed.

Implications

This survey could be used to inform whole class instruction. Low subscores on the value of reading factor call for classroom readings that emphasize meaningful purposes. Readings should be relevant to students. They should address topics that relate to student prior knowledge and should answer the student's own questions. This calls for opportunities for student choice of materials and student-generated inquiry.

Low subscores on the factor of self-concept as a reader call for measures to ensure successful reading experiences. This might mean taking care to offer texts at the student's current reading level, perhaps allowing for more individualized selection of texts. Low subscores on the factor of self-concept as a reader may also indicate the need for more explicit instruction of strategic reading behaviors. Strategic reading behaviors include knowing what to do (i.e. predict, ask questions, reread), when, why and how to do it. Understanding and learning these behaviors leads to control of the reading process, which in turn affects self-concept as a reader.

Instruction can also be individualized for students who have low scores in one or both areas. Specific subscores might pinpoint a need for further interventions in specific areas, such as how to use context to determine word meaning.

Results of this survey can also drive staff development. How do teachers change their belief systems and then acquire the knowledge to make appropriate changes? This is a subject for staff development. If teachers truly believe that it is crucial to motivate students to read, then they must offer text that is pertinent to students' lives. As faculty become more aware that motivation can be fostered in their classrooms, they may choose to explore changes in instruction, perhaps by allowing more student voice and choice in curriculum decisions.

Finally, further research on the survey itself should be considered. One possibility would be to administer the survey to first semester English classes as well as to developmental reading students. Since English students are required to take a reading placement test, their placement test scores could be used instead of the DRP reading test used in this study. This would allow a more thorough examination of the factor structure and it would provide a better measure of correlation between motivational scales and reading level.

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	Survey Items	Scale
*1	I read often.	value
2	I enjoy reading books.	value
3	I question what I don't understand while reading.	reading strategies
4	I understand what I read.	self-concept
*5	I read as well as my friends.	self-concept
*6	My friends think I am a good reader.	self-concept
*7	My best friends think reading is fun to do.	value
*8	Reading a book is something I like to do.	value
9	I set goals for reading.	reading strategies
10	I can identify my strengths and weaknesses in reading.	reading strategies
11	I think about what I am reading as I read.	reading strategies
12	I form opinions about what I am reading.	reading strategies
*13	I tell my friends about good books I read.	value
14	I connect ideas from my present reading to things I've read in the past.	reading strategies
15	I use ideas from my reading to increase my understanding of the world.	reading strategies
16	I think beyonnd the factual level about material I have read.	reading strategies
*17	When I am reading by myself, I understand almost everything I read.	self-concept
18	I can restate or retell the important ideas from what I've read.	self-concept
*19	I am a good reader.	self-concept
20	I feel confident when I write about my reading.	self-concept
21	I react to what I read based on my personal life experience.	reading strategies
*22	People who read a lot are very interesting.	value
23	I am able to use story specifics/quotes when I write about my reading.	self-concept
*24	Knowing how to read well is very important.	value
25	I can discuss at length about progressing through stages in life.	self-concept
26	I can write at length about progressing through stages in life.	self-concept
27	Books that I read are of value to me on a personal level.	value
28	I am willing to try to improve my reading.	value
29	I am aware of reading strategies that work for me.	self-concept
*30	When I come to a word I don't know, I can almost always figure it out.	self-concept
*31	I think libraries are interesting places to spend time.	value
*32	I worry about what others think about my reading.	self-concept
*33	When someone gives me a book for a present, I feel very happy.	value
*34	I think reading is an interesting way to spend time.	value
*35	Reading is easy for me.	self-concept
*36	When I'm in a group talking about what I have read, I always talk about my ideas.	self-concept
37	To be successful in college, I need to read outside of class almost every day.	value
*38	When I read out loud I am a good reader.	self-concept
*39	When asked a question about what I've read, I always think of an answer.	self-concept

*Item adapted from the MRP

FIGURE 1

Items included on the RDG 099 CLASS SURVEY

TABLE 1

Motivation Scales and Scale Statistics, beginning of Fall 1997 semester

Scale	N	Mean	Standard Deviation	Reliability Cronbach's α
Value	254	17.67	5.57	.89
Self-concept	255	20.73	4.71	.84
Reading Strategies	256	20.26	4.80	.80

Scale Items

Value

V1 I read often.
V2 I enjoy reading books.
V8 Reading a book is something I like to do.
V33 When someone gives me a book for a present, I feel very happy.
V34 I think reading is an interesting way to spend time.

Self-concept

S18 I can restate or retell the important ideas from what I've read.
S19 I am a good reader.
S20 I feel confident when I write about my reading.
S35 Reading is easy for me.
S39 When asked a question about what I've read, I always think of an answer.

Reading Strategies

R11 I think about what I am reading as I read.
R12 I form opinions about what I am reading.
R14 I connect ideas from my present reading to things I've read in the past.
R15 I use ideas from my reading to increase my understanding of the world.
R16 I think beyonnd the factual level about material I have read.

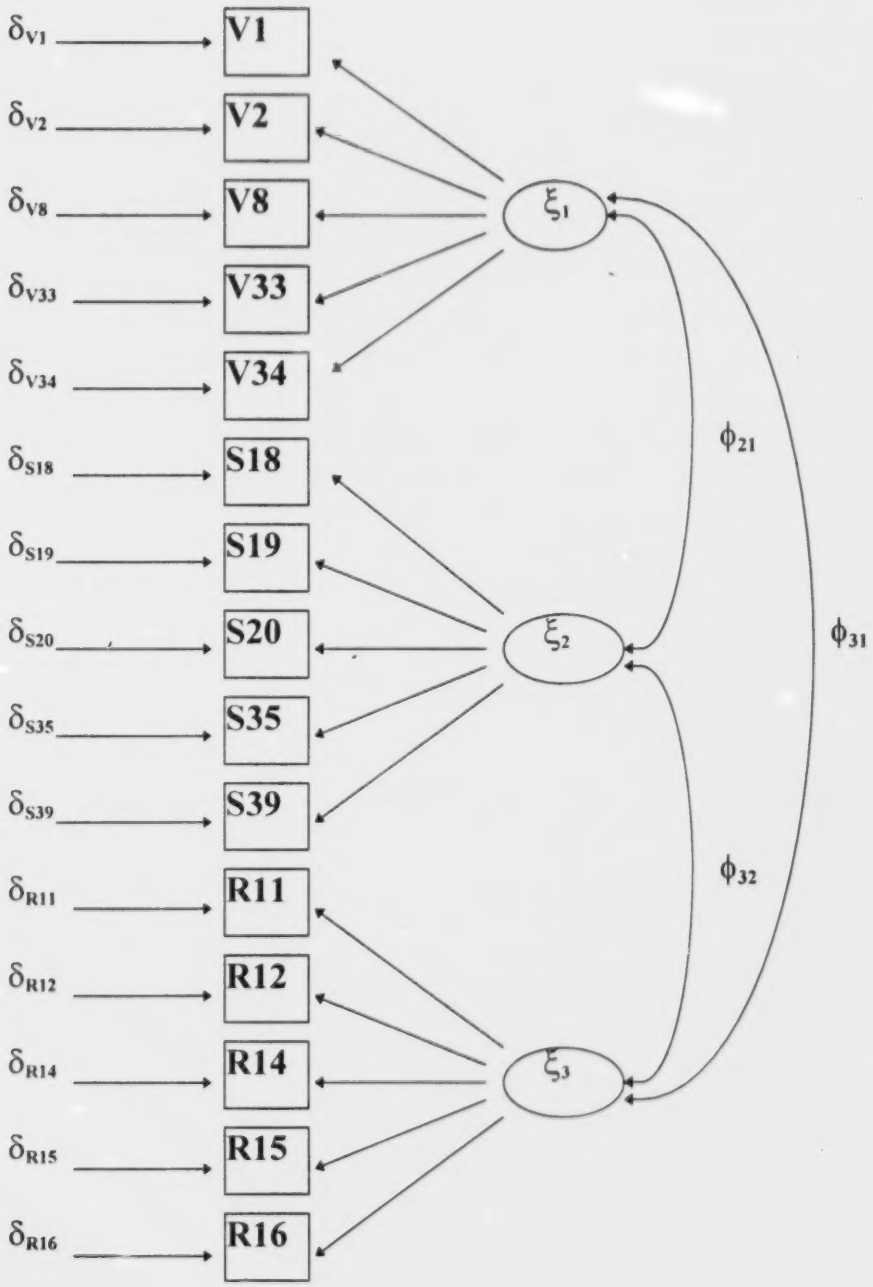

FIGURE 2

Three Factor General Model

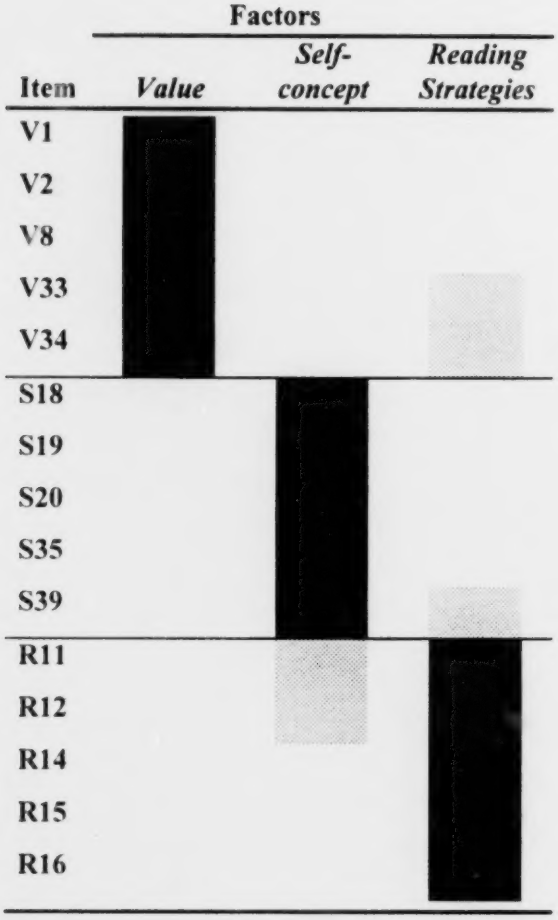

FIGURE 3a

Factor Pattern for Fall 1997 Items

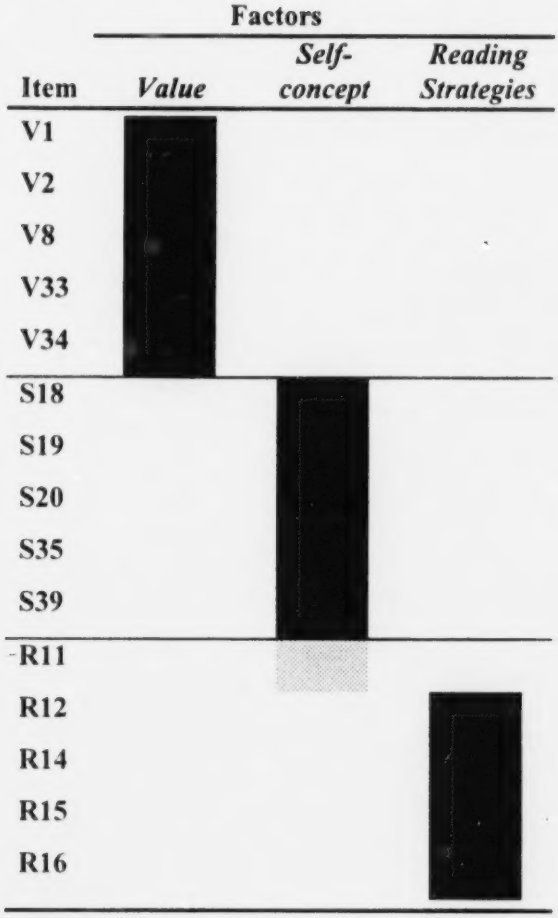

FIGURE 3b

Factor Pattern for Fall 1998 Items

TABLE 2

Correlations of ξ-variables (latent variables) in the 1997 and 1998 data sets[1]

		1998 Data (upper half)		
		ξ_1	ξ_2	ξ_3
1997 Data	ξ_1		.62	.63
(lower half)	ξ_2	.54		.65
	ξ_3	.58	.61	

[1]All correlations are significant ($p<.01$).

TABLE 3

Comparison of beginning to end of Fall 1997 semester scale means using matched pairs (pre- and post)

Scale	Time	N	Mean	SD	*t*-Value
Value	Pre	140	17.69	5.29	4.59
	Post		19.35	5.22	$p < .01$
Self-Concept	Pre	140	20.74	4.67	6.25
	Post		22.88	3.80	$p < .01$
Reading Strategies	Pre	146	20.60	4.50	4.13
	Post		22.14	4.17	$p < .01$

TABLE 4

Correlations of DRP reading test with value, self-concept, and reading strategies scale scores

	Value	***Self-concept***	***Reading Strategies***
Fall 1997, N=244			
DRP	-.03 p<.69	.13 p<.04	.16 p<.01
Value		.49 p<.01	.55 p<.01
Self-concept			.61 p<.01
Fall 1998, N=345			
DRP	.02 p<.71	.12 p<.03	.08 p<.13
Value		.57 p<.01	.57 p<.01
Self-concept			.64 p<.01

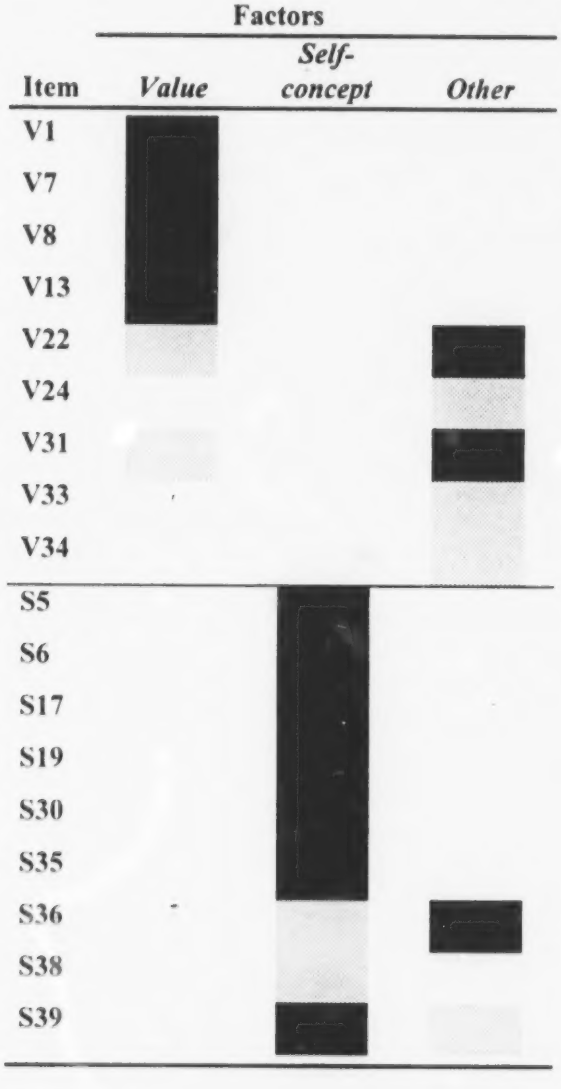

FIGURE 4a

Factor Pattern for Fall 1997 MRP Adapted Items

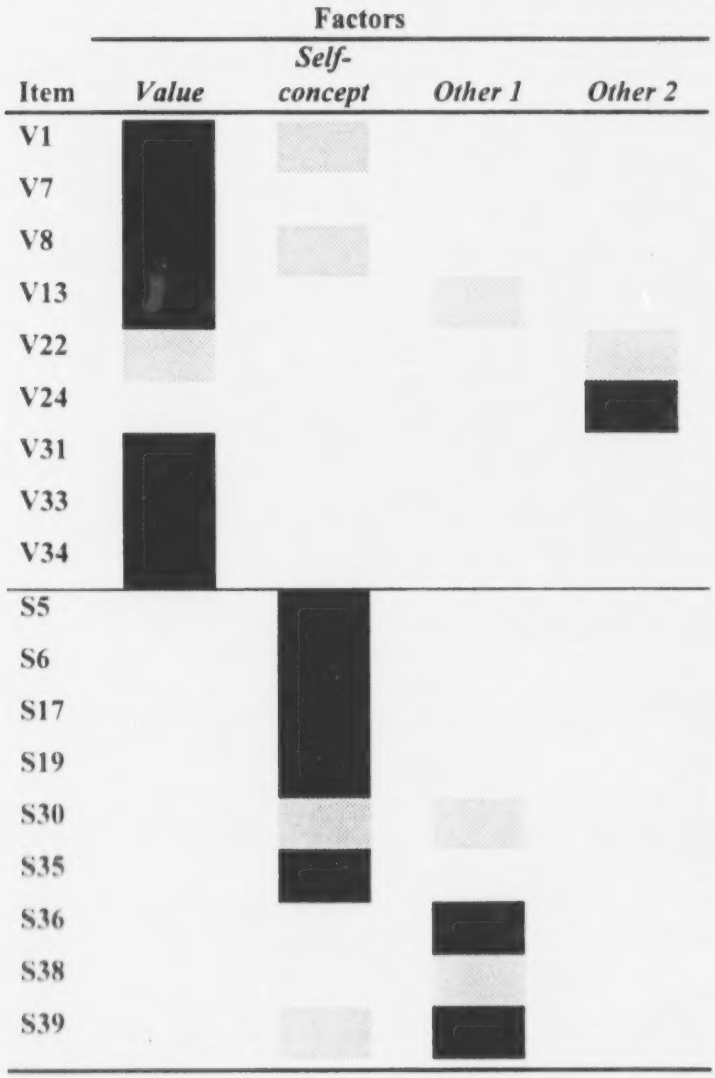

FIGURE 4b

Factor Pattern for Fall 1998 MRP Adapted Items